EMERGENCY TREATMENT IN HOSPITAL OF CASES OF ACUTE POISONING

CORRECTION

Page 4. List of Tables in the Text, page column
  1. Deaths from Poisoning, England and Wales, 1951–1957, *for* " 1 " *read* " 5 ".

Page 8. Graph, year 1957
  Aspirin and Salicylates, Accidents
  for " 144 " *read* " 44 ".

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MINISTRY OF HEALTH

Central Health Services Council

STANDING MEDICAL ADVISORY COMMITTEE

Emergency Treatment in Hospital of Cases of Acute Poisoning

Report of the Sub-Committee

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I. GENERAL

THE PROBLEM

1. We were appointed in 1959 by the Standing Medical Advisory Committee of the Central Health Services Council with the following terms of reference:

> "To consider the arrangements for the emergency treatment of cases of acute poisoning in hospitals, and to advise upon them".

2. We met eleven times and considered, besides various publications, evidence submitted by Dr. S. Locket, Dr. H. L. Marriott, Mr. L. C. Nickolls, Professor G. M. Wilson and the Central Consultants and Specialists Committee of the British Medical Association.

3. We noted that, of approximately half a million deaths annually in England and Wales in the last few years, between four and five thousand were caused by poisoning. This compares with about five thousand deaths annually attributable to motor vehicle traffic accidents. Whereas, however, in 1951 deaths from poisoning averaged 65 per week, in 1957 the average total per week had reached 91. The following table shows the increase in the annual number of deaths from all poisoning:

TABLE 1 Deaths from Poisoning, England and Wales 1951–1957.

1951	=	3,380	1955	=	4,301
1952	=	3,482	1956	=	4,646
1953	=	3,842	1957	=	4,747
1954	=	4,208			

It may be that the numbers will continue to rise with the increasingly widespread use of potent drugs.

4. During each of these years the number of deaths in hospital which were attributed to poisoning was generally rather less than one thousand. The number of admissions to hospital for poisoning was some 15,400 in 1956, 15,900 in 1957, 17,500 in 1958 and 20,100 in 1959. These figures do not distinguish between acute and chronic poisoning, and are quoted in order to give a measure of the size of the problem.

5. The commonest forms of **fatal** poisoning were found to be carbon monoxide, barbituric acid with its derivatives and aspirin and salicylates. Table 2 gives the numbers of deaths attributed to various poisons in the years 1949–1957.

6. In the case of carbon monoxide poisoning it was found that, although the figures of deaths were considerably higher than those from any other poison, the results of the Hospital In-patient Enquiry, which is based on a 1 in 10 sample, suggest that the proportion of these deaths which occur in hospital is considerably lower. Carbon monoxide is a fast-acting poison, and death has frequently occurred before the victim reaches hospital.

7. The incidence of deaths from aspirin and barbiturates is shown on the graph on Page 8. The increase is remarkable especially in the numbers of suicides from barbiturate poisoning.

TABLE 2 **Deaths from Poisoning, England and Wales, 1949 to 1957** (*From R.G.'s Stats. Review 1957–*)

International List Number	Cause of Death	1949	1950	1951	1952	1953	1954	1955	1956	1957
E870–895	*ACCIDENTAL POISONING BY SOLID AND LIQUID SUBSTANCES AND GASES AND VAPOURS*	658	718	820	843	932	1,032	1,173	1,168	1,186
E870	Morphine and other opium derivatives	3	4	4	9	5	2	3	1	2
E871	Barbituric acid and derivatives	77	127	117	140	169	184	192	223	208
E872	Aspirin and salicylates	27	31	37	50	32	32	31	39	44
E873	Bromides	—	—	2	1	—	2	—	1	1
E874	Other analgesic and soporific drugs	16	8	15	16	12	19	14	11	24
E875	Sulphonamides	3	—	1	—	1	—	—	—	—
E876	Strychnine	5	2	9	5	4	1	3	3	2
E877	Belladonna, hyoscine, and atropine	5	2	1	3	1	—	2	—	—
E878	Other and unspecified drugs	4	11	12	10	14	21	19	25	23
E879	Noxious foodstuffs	—	2	1	—	—	—	1	1	1
E880	Alcohol	5	6	6	8	11	12	17	17	20
E881	Petroleum products	—	1	—	2	2	1	6	—	1
E882	Industrial solvents	3	5	5	2	2	4	3	5	4
E883	Corrosive aromatics, acids and caustic alkalis	14	24	17	13	11	12	10	10	10
E884	Mercury and its compounds	1	1	1	1	6	—	3	1	—
E885	Lead and its compounds	3	2	4	4	2	5	2	3	—
E886	Arsenic and antimony, and their compounds	1	3	—	1	—	2	1	—	—

TABLE 2 (continued)

International List Number	Cause of Death	1949	1950	1951	1952	1953	1954	1955	1956	1957
E887	Fluorides	—	—	1	—	—	—	1	1	—
E888	Other and unspecified solid and liquid substances ...	27	26	31	30	16	18	13	15	13
E890	Utility gas (Coal gas)	421	406	515	498	591	660	784	741	757
E891	Motor vehicle exhaust gas	8	8	11	8	17	10	15	15	10
E892	Other carbon monoxide gas	15	29	19	31	27	31	33	40	41
E893	Cyanide gas	2	—	—	—	—	—	1	1	1
E894	Other specified gases and vapours	13	20	10	9	9	16	18	15	23
E895	Unspecified gases and vapours	5	—	1	2	—	—	1	—	1
E970–E973	*Suicide and Self-inflicted injuries*									
E970	Poisoning by analgesic and soporific substances	355	421	373	536	447	534	595	702	695
E971	Poisoning by other solid and liquid substances	218	193	175	175	180	133	132	158	140
E972	Poisoning by gases in domestic use	1,933	1,791	1,956	1,872	2,213	2,428	2,334	2,530	2,601
E973	Poisoning by other gases	21	29	41	27	46	44	43	53	72
E980	Homicide	23	15	15	29	24	37	24	35	53

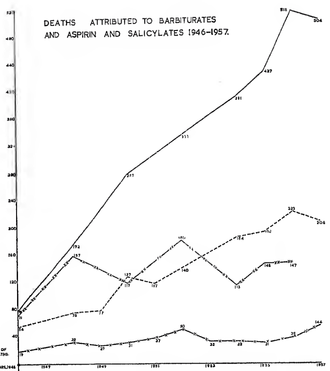
DEATHS ATTRIBUTED TO BARBITURATES AND ASPIRIN AND SALICYLATES 1946–1957.

TABLE 3 **Deaths from Poisoning, England and Wales, 1957** (From special table)

Cause of Death		MALES								FEMALES							
		All ages	Under 1 year	1–	5–	10–	15–	45–	65—	All ages	Under 1 year	1–	5–	10–	15–	45–	65—
Morphine and other opium derivatives	Accidental	1	—	—	—	—	—	1	—	1	—	—	—	—	—	—	1
	Intentional	2	—	—	—	—	2	—	—	3	—	—	—	—	1	2	—
Barbituric acid and derivatives	Accidental	96	—	—	—	—	28	47	21	112	—	—	—	—	24	60	28
	Intentional	199	—	—	—	—	51	98	50	273	—	—	—	—	62	129	82
Aspirin and salicylates	Accidental	18	1	3	—	—	3	9	2	26	—	2	—	—	7	11	6
	Intentional	62	—	—	—	—	23	26	13	92	—	—	—	—	17	52	23
Other analgesic and soporific drugs	Accidental	10	—	1	—	—	6	1	2	15	—	—	—	—	10	4	1
	Intentional	15	1	—	—	—	5	7	2	10	—	—	—	—	1	7	2
Other and unspecified drugs and mixtures	Accidental	18	—	3	—	1	2	4	8	7	1	1	—	—	2	2	1
	Intentional	23	—	—	—	—	8	10	5	26	—	—	—	—	6	16	4
Noxious foodstuffs	Accidental	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
	Intentional	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alcohol	Accidental	15	—	—	—	—	5	8	2	5	—	—	—	—	2	3	—
	Intentional	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Corrosive aromatics, acids and caustic alkalis	Accidental	4	—	1	—	—	1	1	1	6	—	1	1	—	—	1	3
	Intentional	55	—	—	—	—	19	27	9	41	—	—	—	—	12	15	14
Other and unspecified solid & liquid substances	Accidental	14	—	2	—	—	7	2	3	4	1	2	—	—	—	1	—
	Intentional	19	—	—	—	—	9	8	2	11	—	—	—	—	2	4	5
Carbon Monoxide	Accidental	345	—	2	—	5	51	91	196	463	1	1	—	—	28	99	334
Domestic Gas	Intentional	1,399	—	—	—	3	389	626	381	1,202	—	—	—	1	244	607	350
Gas from other sources	Intentional	67	—	—	—	—	35	26	6	5	—	—	—	—	—	3	2

NOTE 1. Figures cannot be obtained for intentional poisoning by carbon monoxide. Some deaths due to poisoning by carbon monoxide may have been classified under 'Gas from other sources'.

2. The figures in this Table relate only to deaths where information was available about the detailed classification.

8. The Hospital In-patient Enquiry for 1956 indicated that 39% of over 15,000 hospital admissions on account of poisoning were attributable to the taking of barbiturates, 15% to the taking of aspirin and other salicylate compounds and 12% to the effects of carbon monoxide. These three categories accounted for 38%, 24% and 18% respectively of total deaths in hospital from poisoning.

9. It must be emphasised that in the case of the relatively small figures with which we are dealing the In-patient Enquiry can give only a rough impression. Since over half of the deaths in hospital due to poisoning are caused by analgesic and soporific substances, effective treatment demands urgent attention.

10. Table 3 on Page 9 gives a breakdown by age and sex of the deaths attributed to poison in 1957.

11. It will be noticed that 35 children under 15 years of age died of poisoning, but it is not possible to say what proportion of these deaths occurred in hospital. The sample of the Hospital In-patient Enquiry in 1956 revealed that approximately 25% of those admitted were under 15 years of age but none of these died. As with adults, the largest single cause of admission was poisoning by soporific and analgesic drugs—the proportion was 20% in the case of aspirin and other salicylates, and 7% in the case of barbiturates.

12. The number of poisonous preparations on the market is growing so rapidly that although they are issued in various forms and colours, their recognition is becoming increasingly difficult. Moreover, many more toxic substances have been introduced into horticultural use, for instance as insecticides, and in domestic use as cleaning and polishing agents. Frequently the chemical composition of the latter is known only to the manufacturers.

13. The figures of the Hospital In-patient Enquiry indicate that over a third of the deaths in hospital due to poisoning occur on the day of admission, and there may be further deaths in the casualty departments before the patients are admitted to the wards. Although the fatality rate of poisoning cases reaching hospital may be as low as 6—7%, of which about half die in the Casualty Department, there is no reason for complacency.

COMPARISON WITH OTHER COUNTRIES

Accidents

14. The frequency of deaths due to accidental poisoning was found by the W.H.O. to vary widely from 10·6 (Italy)—rates per one million population—to 49·0 (Scotland) for males and from 5·6 (Norway) to 49·5 (Scotland) for females. Other countries with a high mortality were Denmark, France, England and Wales. The period 1950-1956 witnessed an increase in eight countries; in six other countries the frequency of such deaths did not show any significant trend and in one other (the United States) they were on the decline.

TABLE 4. Percentage of deaths due to certain types of poison in relation to all accidental deaths by poisoning

Country	Analgesic and soporific drugs		Utility gas		Combustion gases	
	M	F	M	F	M	F
Australia (1954/1956)	20·9	30·7	19·6	20·1	4·3	4·2
Belgium (1954/1955)	4·8	10·0	40·8	48·5	26·5	26·2
Canada (1954/1956)	17·1	37·5	27·7	30·5	23·3	8·5
Denmark (1954/1956)	19·8	31·1	46.0	52·8	18·1	7·2
England and Wales (1954/1956)	20·7	23·7	58·9	69·6	7·4	1·7
France (1954/1956)	6·1	8·8	52·5	58·2	23·4	21·0
Italy (1953/1955)	2·6	4·8	28·6	40·0	16·3	11·8
Japan (1954/1956)	18·8	29·2	7·2	11·7	13·9	16·3
Netherlands (1954/1956)	7·0	4·9	50·5	58·6	17·2	24·1
New Zealand (1953/1955)	14·6	35·0	37·5	45·0	6·2	10·0
Norway (1954/1956)	13·3	27·6	4·0	10·3	6·0	6·9
Scotland (1954/1956)	16·1	19·8	74·5	77·1	1·1	—
Sweden (1953/1955)	24·7	48·6	11·3	19·4	30·4	8·3
Switzerland (1954/1956)	—	—	41·4	61·8	14·4	4·1
United States (1954/1956)	18·7	34·6	19·5	22·5	25·2	12·3

Suicide

15. Suicide by poison was found to be more frequent than accidental poisoning in all the countries studied by the W.H.O. on this occasion except Canada and France (both sexes), Scotland (females) and Italy (males).

II. CURRENT PRACTICE

INTRODUCTION

16. We considered various methods of dealing with cases of poisoning which are currently employed in this country and abroad, of which the following are examples:

SOME CURRENT METHODS EMPLOYED IN ENGLAND AND WALES

17. The hospitals and staff in Wales (Board of Governors and Regional Hospital Board) have been circularised with particulars of suggested arrangements for the treatment of patients suffering from poisoning of various kinds. There are two parts to this scheme. One is a "recognition demonstration" cabinet which would help the doctor concerned to identify the toxic agent if

some remained unused. It is suggested that this cabinet should be fixed to the wall of the casualty department. Secondly there is a " therapeutic " cabinet with instructions on how and when to use the antidotes which it contains. This cabinet also contains such instruments as B.L.B. mask, airways, oesophageal tubes, cutting down set, syringes, needles etc. It is suggested that the closest collaboration with anaesthetists may be required in the acute phase of treatment and that some patients may need further investigation in the convalescent period.

18. The Medical Committee at Guy's Hospital instituted an enquiry in 1956 into the diagnosis and treatment of cases of acute poisoning admitted to the casualty department. As from January, 1958, a booklet of instructions covering diagnosis and treatment was given to the house officers on duty in the casualty department. In addition, the following measures were adopted:

Diagnosis

To facilitate the early diagnosis of acute poisoning there is kept in the casualty department (usually in Sister's Room).

(i) A handbook of poisons, which is a useful practical guide to the subject.

(ii) Special diagnostic charts for the quick recognition of many of the pills and capsules in current use.

Treatment

A memorandum on " The Principles of Treatment in Acute Poisoning " is kept in the Casualty Department.

A special form is filled in at the time of reception and emergency treatment of the patient in the casualty department. The top copy of the form accompanies the patient to the ward on admission, and the carbon copy will accompany any specimen removed and sent to the Department of Clinical Pathology for analysis. Special containers for this purpose are provided.

Any specimen taken is labelled at the time by a self-adhesive label, a supply of which is also kept in the Casualty Department, and taken personally by those handling the case to the Department of Clinical Pathology, and there identified and signed for by a member of the Staff of that department. The instructions are that the specimen shall in no circumstances be left anywhere without such precautions to ensure continuity in identification.

THE USE OF THE ARTIFICIAL KIDNEY

19. The Artificial Kidney can be used for haemodialysis in selected cases of poisoning from barbiturates. These machines are at present located at Birmingham, Halton, Leeds, Liverpool, Newcastle and in London at Hammersmith, the London, the Royal Free, St. Bartholomew's, St. Paul's and Westminster Hospitals. Others are to be provided.

SOME CURRENT METHODS EMPLOYED ABROAD

United States of America

20. In 1953 a Poison Control Centre was set up in Chicago under the sponsorship of the American Academy of Pediatrics. This acts as a central

information agency where data on the ingredients and toxicity of drugs can be obtained and advice given on the treatment of poisoning. By March 1960 there were nearly 300 of these Centres; 90% are located in hospitals; 85% of them have facilities for treatment and some are carrying out research into the incidence of poisoning.

21. A National Poison Control Centre has been set up by the Public Health Service in Washington D.C. This is concerned with the interchange of information among local centres, stimulation of preventive measures and encouragement of research. It gives aid in the establishment of new Poison Control Centres, studies trends in poisoning accidents and acts as a repository of information.

Canada

22. Poison Control Centres on lines similar to those in the U.S.A. are being set up in Canada. The Canadian Food and Drugs Directorate under the direction of the Chief Medical Officer is making a special card-index available to these centres. This gives information on toxic drugs and poisonous substances and includes information on treatment.

III. GENERAL CONSIDERATIONS

INTRODUCTION

23. Some of the recommendations recorded below raise questions of principle, and require explanation to enable the reader to appreciate the reasons for making them. In the main body and Appendix I of this Report the official names of drugs rather than the trade names are used. When the trade names are the better known, they are added to help in the identification of the drug to which reference is made.

RESUSCITATION IN CASES OF CARBON MONOXIDE POISONING

24. In 1958*, the Minister of Health informed local health authorities that he had been advised by the Medical Research Council that, for the purposes of first aid treatment of carbon monoxide poisoning, use should be made of 5 per cent carbon dioxide in oxygen (carbogen) instead of pure oxygen. Earlier advice had advocated pure oxygen. It was recommended at that stage that ambulances should be equipped with both pure oxygen and with 5 per cent carbon dioxide in oxygen.

25. Evidence has been received, however, that 7 per cent carbogen has advantages in producing significantly increased pulmonary ventilation and **no recent** evidence **could be adduced** of serious damage arising from the additional 2 per cent carbon dioxide. From such evidence as has been available to us, **in our opinion this is the optimum concentration of carbon dioxide and** it is therefore recommended **that the Medical Research Council be requested to re-examine the evidence in favour of 7 per cent and** that, **in the event of a satisfactory report from them being received** the higher percentage should normally be used for resuscitation, but that the period of exposure be kept short. It is unlikely that it will be necessary to continue this measure for more than twenty to thirty minutes.

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* Ministry of Health Circular 23/58.

LABORATORY EXAMINATION OF CLINICAL SPECIMENS

26. The widespread use of sedatives, hypnotics and tranquillizing drugs necessitates the differentiation of therapeutic from toxic doses by estimation of amounts in stomach washings or concentrations in the body fluids. Rapid quantitative measurement of barbiturates requires an ultra violet spectrophotometer, an apparatus not always readily available. Moreover, unless the nature of the barbiturate is known, the interpretation of the result of the analysis is difficult if not impossible, for the identification of an unknown barbiturate may take too long for the result to be helpful.

27. The laboratory investigation of poisons other than aspirin, salicylate or barbiturates is a major problem aggravated by the great pharmacological activity per unit weight of many recently developed drugs. It can be carried out only by staff specially trained in this kind of analysis.

28. *Poisoning by cholinesterase inhibitors may occur either during anaesthesia to individuals sensitive to relaxant drugs or through accidental poisoning by organophosphorus insecticides. The pharmacological process is different in these two cases but either may be recognised clinically by the characteristic paralyses and probably by the circumstances of the poisoning. Conformation is obtained by the low plasma cholinesterase activity, estimation of which should be within the capabilities of most chemical pathology laboratories.

THE ARTIFICIAL KIDNEY

29. The artificial kidney is a safe and reliable method primarily for the treatment of selected cases of acute renal failure. It has also been used in the treatment of certain cases of poisoning without renal failure. In the hands of a highly skilled and experienced team (including laboratory staff with all facilities) it may aid the elimination of some poisons. Indications for its use in this field are, however, not yet clearly defined.

30. So far as can be judged on present information, the number of patients requiring dialysis from all causes is not large, but it would seem desirable to have a number of these machines situated at strategic points in the country according to the density of population. Transport of patients is feasible provided that it is done early, and is preferable to transport of the apparatus with its attendant team to the patient.

EXCHANGE TRANSFUSION

31. Exchange transfusion has been used experimentally in the U.S.A. in the treatment of poisoning due to boric acid, carbon monoxide, isoniazid and salicylates. Recommendations on this measure must await further developments.

FURTHER TREATMENT

32. Many patients suffering from the effects of poisons have attempted suicide. It is desirable that when such a patient has fully recovered consciousness the advice of a psychiatrist should be obtained.

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* See articles in the British Medical Journal (16th July, 1960) and Lancet (23rd July, 1960).

IV. RECOMMENDATIONS

(i) HANDBOOK OF TREATMENT

33. Our terms of reference do not justify us in making clinical pronouncements. We draw attention to the desirability of having available in all casualty departments works of reference containing current information about the nature of poisons and the diagnosis and treatment of poisoning.

34. There seems to be scope for a publication designed specially to meet the needs of general practitioners who will, for the most part, have to deal with cases of poisoning.

(ii) ORGANISATION OF CENTRES FOR THE TREATMENT OF POISONING AND REFERENCE CENTRES

District Centres

35. While general practitioners will continue to be called to cases of poisoning and all casualty departments may expect to receive cases, we think it important to designate one general hospital as the preferred receiving centre for cases of poisoning over an area. Serious cases of poisoning or suspected poisoning should when possible be sent to this District Centre. The co-operation of the Emergency Bed Service or Bed Bureau in arranging the immediate admission of such cases to the District Centre as a routine could be invaluable. Such a centre should be chosen so that it was of easy access to all parts of the district it served. It should also have adequate equipment*, and be linked with a laboratory capable of carrying out essential investigations. When more than one hospital in a restricted area is equipped to the necessary standard, it would be a matter for local decision as to which should be a District Centre and how many beds should be made available. Since some poisoned persons need psychiatric care, it is desirable to have access also to psychiatric beds.

36. Cases may be referred from general practitioners, from hospital consultants or from other casualty departments. Some patients will also arrive direct at the District Centre as they do to ordinary casualty departments, especially when the centre becomes known.

37. The District Centre should be in the charge of a physician specially interested in cases of poisoning who should be designated to deal with such patients. He should be able to call on the services of a consultant anaesthetist or psychiatrist. He or his deputy should be available for consultation at any time by casualty officers throughout the district. He should, also, with the help of the hospital pharmacist, instruct the junior staff of the casualty department in up-to-date methods of treatment of poisoning. Financial allowance should be made for these special duties.

Regional Centres

38. If the use of the Artificial Kidney becomes established as a recognised method of treatment in selected cases of poisoning, the hospital where it is located—which might also happen to be the location of a District Centre—could be regarded as the Regional **Poisoning Treatment Centre.** The treatment

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* A list of equipment for casualty departments and district centres is shown at Appendix I for guidance in planning. It is further recommended that forms such as those in Appendix II should be available. One copy and two carbons would be filled in. The original would be sent with the specimen to the laboratory and one copy kept in the casualty records.

of cases of poisoning in these centres would necessitate close liaison between the clinical toxicologist and the team trained in the use of the Artificial Kidney. These Regional **Poisoning Treatment** Centres might also become recognised as the most suitable for treatment of those patients requiring treatment by specialised techniques such as exchange transfusion.

(iii) NATIONAL INFORMATION SERVICE

39. It is not infrequently a serious problem for doctors called in to deal with an emergency to identify rapidly and with certainty the properties or the ingredients of a substance known to have been ingested. The establishment of a service which could at any time give uniform information to inquirers could be of invaluable assistance. We were impressed by the evidence we received as to the usefulness of the services organised in the United States of America and Canada (see paragraphs 20—22).

40. The organisation of equally effective arrangements in this country need not necessarily imitate foreign practice. Indeed the absence of a central institution equivalent to the Public Health Service Laboratory in Washington (for example) would make this impossible. What seems to us to be essential is that district or regional poisoning treatment centres (or both) should be armed with uniform information from a central source so that inquiries may be dealt with locally and promptly. The information might be in various forms, e.g. handbooks, leaflets or a card index or a combination of these. We note that the Pharmaceutical Society already publishes a current card index of new pharmaceutical products. A number of organisations would be concerned in any arrangements and we make no precise recommendations as to the methods to be employed.

41. We think that there is need for further research in toxicology and it may well be desirable to have an academic centre for this purpose. The advice of the Medical Research Council should be sought on the development of research in this field.

(iv) IDENTIFICATION OF TABLETS AND CAPSULES

42. Methods by which the identity of pharmaceutical tablets and capsules might be indicated were recently discussed by the medical and pharmaceutical professions. It was stated that the current practice of many manufacturers was to mark their products either with the firm's name or by initials or by a registered trade-mark. These marks merely gave indication of the origin of the tablets. In addition, some firms marked the name of the substance on the tablet, but this method of identification had practical limitations: tablets were small and many pharmaceutical names were long, and abbreviations might be misleading. It was also suggested that the dose should be stated by a variation of the code number. Colour as a sole aid to identification was held to be unreliable. It was suggested that a system of letters and numbers should be adopted which, together with the manufacturing firm's trade-mark or initials, would provide an infallible means of establishing the origin and composition of every tablet in the pharmaceutical range. It was thought that a practical scheme on these lines could be evolved to deal with compressed tablets and compression-coated tablets, but the marking of pan-coated tablets might present problems to the manufacturers. Capsules could be marked with a system of different

coloured bands or it might be possible to print code letters and numbers on the capsules as was suggested for tablets. The above identification scheme could be applied to B.P. and B.P.C. tablets.

43. We realise that the adoption of the proposals which have been outlined would present the manufacturers with many problems, some relating to the details of manufacture and others concerned with home and export markets. New drugs are continually being introduced, many from U.S.A. and from other countries, and to be fully effective the code must be adopted not only in this country but internationally. Consideration would also have to be given to the issue and distribution of copies of the code and to means for keeping it up-to-date.

44. An effective means of identifying tablets and capsules is of vital importance to medical practitioners called to cases of poisoning. We are emphatically of the opinion that the whole subject should be considered by a committee specially appointed for the purpose*

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* The Minister of Health's Standing Pharmaceutical Advisory Committee was subsequently asked to consider this subject and reached the following conclusions:—

(*a*) Technically, the marking of all tablets may be possible, but there are great physical difficulties; for instance the number of dies required and the difficulties of getting them engraved; and the special and expensive equipment needed for marking sugar-coated tablets. On small tablets it might well be difficult to identify the marks, with consequent danger of confusion.

(*b*) In practice the application of a scheme would be complicated as it would have to apply to any tablets—medical or otherwise—including imported tablets. Further, some central organisation would be necessary to allocate markings and to keep doctors and others informed about them. To be effective the scheme would need to be mandatory, and would require enforcement.

(*c*) The cost of production would be increased by the need for additional and in some cases expensive equipment; and by the need to manufacture separately for export if, as is likely, the marked tablets would not be acceptable abroad, involving separate manufacture and duplication of stocks. While, for obvious reasons, specific estimates cannot be given of the increase in the cost of tablets which would arise, it is clear, from estimates given on various bases, that it would be very substantial.

(*d*) In principle, it has always been considered to be bad pharmaceutical practice to rely on colour or surface markings for the identification of tablets. The more widely the practice of marking is extended the greater the difficulty of differentiation and the greater the danger of error.

The Standing Committee also considered the possibility of requiring tablets of particular groups of substance to be marked, but decided that such an arrangement would be open to most of the objections referred to above, and would be unlikely to meet the needs which the Sub-Committee had in mind.

For the reasons set out above, the Committee advised that no further consideration be given to this question.

V. SUMMARY OF RECOMMENDATIONS

(i) All casualty departments should have adequate works of reference on poisoning, and a handbook on the immediate treatment of poisoning.

(ii) One general hospital in an area should be designated as the preferred receiving centre for cases of poisoning, to be known as the District Centre. It should have an adequate laboratory service.

(iii) Specialised techniques, such as the use of the artificial kidney, should be carried out only at what may be called the Regional Poisoning Treatment Centre.

(iv) An information service on poisoning should be set up with central arrangements for co-ordination.

(v) The increasingly rapid appearances of new drugs make it desirable to have a centre for academic research on toxicology. This recommendation should be discussed with the Medical Research Council.

(vi) A committee should be set up without delay to consider the identification marking of commercial tablets and capsules.

APPENDIX I.

The recommendations in this Appendix are intended solely as a guide

EQUIPMENT

1. **All Casualty Departments** should provide in addition to facilities for reception, examination, documentation and disposal, certain equipment needed for the emergency treatment of patients who are poisoned. The smaller items of this equipment should be kept in a special place—a cupboard, box, etc. which is clearly labelled, generally accessible at all hours but not depleted of its contents for other purposes. Someone must be made responsible for a regular check of its contents.

(*a*) *Diagnosis*

(1) Some form of recognition panel or box containing labelled specimens of drugs and the available coloured charts.

(2) Books—the Extra Pharmacopoeia, the British National Formulary, a current volume on treatment of poisoning, a handbook or pamphlet for guidance of junior officers of the hospital or one specially written for the purpose, such as Appendix I.

(3) Appropriate vessels for collection of blood, cerebro-spinal fluid, urine, etc. Forms and simple instructions on the amount and handling of the specimens.

(*b*) *Treatment*

(1) Such instruments as may be needed by an anaesthetist to examine and intubate a patient, e.g. Ferguson gag with Acland jaws, face masks, airways, endotracheal tubes, catheters, bronchoscope, spray, laryngoscope and a suction apparatus; the means to give oxygen or oxygen with 7% CO_2 with metered flow and some device such as an Ambu hand-operated resuscitator for air and oxygen.

(2) Such instruments as may be needed to give an infusion or a series of injections, e.g. a cutting down set and cannulae, a giving set, 500 ml or litre bottles of Injection of Dextrose B.P., a Gurd needle, a Forrester's adaptor, and a supply of sterile syringes, needles, swabs, dishes, etc. as would be provided for parenteral therapy.

(3) Such instruments of several sizes as are needed for gastric lavage—funnels, oesophageal tubes, Nos. 12, 16, 20 English gauge, connections, suitable jugs, basins, screw-top receptacles. A couch or table which may be tilted is of great value.

(*c*) *Drugs of special value*

These are in addition to the drugs usually available for local cleansing, starting chemotherapy, relieving pain, spasm, etc. They may well be arranged in groups in a labelled recess, container, etc. for easy access, somewhat as follows:

Anaesthetics

Anaesthetic ether
Solution of butacaine hydrochloride
Injection of Lignocaine B.P.
Injection of Thiopentone Sodium B.P.

Antidotes

Acetic acid 0·1 % solution
Chalk 15g/100 ml.
Copper sulphate ·05 % solution
Lime water 100 ml.
Magnesia 15g/100 ml.
Sodium bicarbonate 5g.
Sodium thiosulphate 1 % solution
Soluble starch 15g/100 ml.
Universal Antidote

Demulcent

Liquid paraffin 4 fl. oz.

Emetic

Sodium chloride 1 oz. in 8 fl. oz. bottle

Fluid Therapy

Injection dextran solution
,, of Dextrose B.P.
,, M/6 sodium lactate

Ophthalmic

Eye-drops of Cocaine B.P.C.
,, ,, ,, Physostigmine (eserine) B.P.C.
,, ,, ,, Homatropine B.P.C.

Sedative

Amylobarbitone sodium tablets or capsules B.P.
Mixture of chloral hydrate and potassium bromide B.P.C.
Chlorpromazine Tablets B.P.
Injection of Paraldehyde
,, of Phenobarbitone Sodium B.P.

Specific

Injections :
- Atropine sulphate B.P.
- Calcium gluconate B.P.
- Dimercaprol B.P.
- Injection of Mephenesin
- Levallorphan tartrate
- Nalorphine B.P.
- Neostigmine B.P.
- Pralidoxime methanesulphonate
- Sodium calciumedetate

- Sodium nitrite B.P.C.
- Sodium thiosulphate B.P.C.
- Suxamethonium Chloride B.P.
- Vitrellae amyl nitrite B.P.C.

Stimulant

Injections :
- Adrenaline Hydrochloride B.P.
- Aminophylline B.P.
- Bemegride (Megimide) etc.
- Nikethamide B.P.
- Noradrenaline tartrate
- Methylamphetamine hydrochloride B.P.

2. *District Poison Centre*

In addition to the above the equipment available at a District Poison Centre, preferably kept in a Resuscitation Room or Unit, should contain the means of giving continued artificial respiration or assisted respiration, oxygen giving sets, oxygen tents and the means of measuring tidal air and oxygen saturation.

A readily available special service for clinical biochemistry will be necessary.

APPENDIX II.

(a) *Specimen Label*

NAME..AGE.........

Address ....

Nature of Specimen ....

Admitted to .... WARD

(b) *Specimen Form*

To accompany patient on Admission to Ward

CASE OF POISONING

NAME AGE Brought in by
Address Date and time
Sent by Dr. (Telephone No.)
Casualty Officer
Time seen
CLINICAL HISTORY Presumed time of taking poison
Suspected poison

CONDITION ON ADMISSION (to Casualty Dept.)
Temp. Pulse Resp. Degree of unconsciousness
Reflexes :
Colour Corneal Swallow
Nature of Resp :
Other features :

TREATMENT UNDERTAKEN
Time Nature Drug Dosage

SPECIMENS OBTAINED Time
Blood
Urine
C.S.F.
Stomach-vomit
washout

Sample of Suspect Poison
fluid............powder............
tablets............capsules.........

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